

Bright futures technology: Curriculum, Maori and the environment

James D. Marshall

University of Auckland

ABSTRACT

In this very long paper I have taken the opportunity to bring together some of my ideas, critiques, and written material from the preceding decade on the following topics: the reforms in education; the curriculum; technology; technology in the New Zealand curriculum; and the bright new future which the knowledge economy and the knowledge society are purported to offer us. Deeply embedded and embroiled in this is the new information technology. In general technology is conceived as being neutral, as a means to an end only. Section I, drawing heavily upon the work of the German philosopher, Martin Heidegger, critiques this notion of technology, the effects upon the self of conceiving technology in this manner, and looks at the impact upon Maori of western technology. Section II looks at the introduction of technology as both a subject and as an aid to learning and teaching in the New Zealand curriculum. The argument is that whereas the curriculum makes a place for social and environmental considerations it still conceives technology as neutral. In the long term this will involve changes to the notion of the self for both Pakeha and Maori. In Section III I examine the Bright Futures Policy of the New Zealand Government (1999), arguing that the 'rush' to the knowledge economy and the knowledge society is not new because it has been a well laid path going back to at least the 1988/9 Education Acts and the 'reforms' in education. Bright Futures is not something which we have to now do, for we have been doing 'it' for some time. Instead Bright Futures should be understood as something which 'we', as educators, have to speed up.

Introduction

In this very long paper I have taken the opportunity to bring together some of my ideas, critiques, and written material¹ from the preceding decade on the following topics: the reforms in education; the curriculum; technology; technology in the New Zealand curriculum; and the bright new future which the knowledge economy and the knowledge society are purported to offer us. Deeply embedded and embroiled in this is the new information technology. In general technology is conceived as being neutral, as a means to an end only. Section I, drawing heavily upon the work of the German philosopher, Martin Heidegger, critiques this notion of technology, the effects upon the self of conceiving technology in this manner, and looks at the impact upon Maori of western technology. Section II looks at the introduction of technology as both a subject and as an aid to learning and teaching in the New Zealand curriculum. The argument is that whereas the curriculum makes a place for social and environmental considerations it still conceives technology as neutral. In the long term this will involve changes to the notion of the self for both Pakeha and Maori. In

Section III I examine the Bright Futures Policy of the New Zealand Government (1999), arguing that the 'rush' to the knowledge economy and the knowledge society is not new because it has been a well laid path going back to at least the 1988/9 Education Acts and the 'reforms' in education. Bright Futures is not something which we have to now do, for we have been doing 'it' for some time. Instead Bright Futures should be understood as something which 'we', as educators, have to speed up.

I. Technology

Introduction

The New Zealand education system was launched into a number of 'stunning' changes in 1988, but these still do not seem yet to be complete. These changes, initially promoted as reforms, have been similar to those which have taken place, or are taking place, in Australia, Britain and Canada. The intellectual framework was encapsulated by the adoption and adaption of ideas from John Locke and Adam Smith, but draws upon the more recent work of such as the Harvard neo-liberal philosopher Robert Nozick, the Austrian born economist, the late F.C. Hayek, and the Chicago School of Economics. If these proposals for change in New Zealand were launched initially as administrative changes they were soon seen as educational *reforms*; if initially they were seen as providing a more efficient delivery of educational services they were soon said to be capable of providing a *better* education. However the changes are caught well by Jean-François Lyotard's (1984) concept of performativity. Lyotard argues that liberal education systems have abandoned notions of the development of leaders and an educated elite as they have become subsumed under wider demands for the efficient functioning of economic and social systems. If Lyotard is correct that the changes should be seen as part of the world wide subsumption of education systems under wider demands for the efficient functioning of economic and social systems, then they are far from administrative changes in the delivery of education.

There are many issues in the changes which could be discussed, but as there is already a considerable literature available I wish to concentrate explicitly upon technology, especially information technology, as an aspect of the recent formal and explicit introduction of Technology into the New Zealand curriculum, and the role of technology in the 'bright new future' offered by the Knowledge Economy and the Knowledge Society. I wish to raise a number of philosophical questions about the nature of technology, missing from official Ministry of Education Documents. In general technology has been seen in New Zealand curriculum documents as being unproblematic, as being neutral means to ends seen as part of human activity, and to be decided and implemented so that humans retained mastery over technology. This position is to be found in both major national curriculum documents for schools, *The New Zealand Curriculum Framework* (MoE, 1993), and *Technology in the New Zealand Curriculum* (MoE, 1995), and in the Green Paper on tertiary education, *A Future Tertiary Education Policy for New Zealand: Tertiary Education Review* (MoE, 1997). In general questions about technology have themselves been technicist, or 'How to ...?' questions, and not questions about how technology is to be situated into a wider cultural, social, ethnic, intellectual and political milieu (see Peters and Roberts, 1998: Marshall, 1998a).

However in relation to Universities and the tertiary sector Peters and Roberts (1998), and their contributing authors, situate the development of virtual technologies into these wider contexts. These authors share the view that (Peters and Roberts, 1998:31):

While tertiary educators must make the most of new possibilities for teaching and learning afforded by virtual technologies, there are general dangers in computerisation ... [the authors] ... take the position that technologies are never neutral ... [they] ... reject a narrowly instrumentalist conception of communication and information technologies. The book explores some of the myriad forms technological developments might take in different settings (my insertions).

In the foreword to the 1997 Green Paper on Tertiary Education the then Minister of Education, Wyatt Creech says that the document will 'take a long view into the future, to talk about where we want to go over the next twenty years and more'. But information technology, 'one of three powerful trends', is seen by him merely as extending 'the range of learning opportunities for all New Zealanders' and changing 'how learning occurs as well as when it occurs'. In spite of the importance ascribed by the minister there are only two other references in the document to communications and information technologies but these are in the context of an adjunct to learning and of opening up international opportunities. 'There is a complete lack of analysis of (the communication and information technologies) issues in the Green Paper and no reference to a national vision' (Peters and Roberts, 1998: 27).

We will look however at what must be seen as a parallel treatment of communication and information technologies, and technology in general, in official documents on primary and secondary education in New Zealand (in particular MoE, 1993;1995). What is missing also in the pre-tertiary documents is a theoretical discussion of information technology. In all of these documents, considering the role that information technology is to take in the future shape of all sectors of education as education becomes subsumed under general demands for *efficiency* or *performativity* (Lyotard, 1984), there is little or no discussion of the nature of technology, or of research on the impact of technology upon teaching and learning, and its impact upon human beings. I intend to problematise such issues in the area of pre-tertiary education by examining the nature or *essence* of technology, which is the central issue ignored, or *dodged*, by pre-tertiary curriculum documents. In what follows I will merely refer to these as 'the curriculum documents', and to 'the curriculum' as excluding tertiary curricula.

Technology was introduced, as a formal 'subject', into New Zealand's compulsory education curriculum in 1993, as part of the 'stunning' changes which commenced at all levels in 1988. A more recent Government paper 'Bright Future; Five Steps Ahead' which introduces a new Government Policy entitled 'Bright Futures', suggests that we are about to enter, without democratic discussion and merely some whimpers, Jean-François Lyotard's (1984) world of performativity (Shipley, 1999). As the Hon. Max Bradford (the then Minister for Tertiary Education) says in that document:

The world is changing into a global market place as we go through a revolution in information and communications technology. Things we used to dream of are becoming possible at an amazing rate ... Bright Future will spearhead our efforts to make New Zealand the best country to live and do business in. It's an investment in our future.

What is needed, according to the Ministerial contributors to that document is the urgent and rapid development of a Knowledge Society. Their contribution to this document is then to signal provisions to be made to bring about the Knowledge Society, so as to bring education and industry together under the umbrella of performativity. This is to be achieved through the production and saleable transmission of useful knowledge through technology, and a 'proper' education system geared to the enhancement of both technologies and also a supporting and legitimating set of administrative structures.

In general Maori have not been consulted on Bradford's 'things never dreamed about' that these modern advances through education in technologies are purported to 'bring'. A very recent example has been the issue of genetic modification of organic life (see below). But is this surprising? As two New Zealand scientists have commented: "... the partnership between Maori and Pakeha (non-Maori) has not yet bridged the cultural divide that separates Western science from other worldviews, especially that of the first people of Aotearoa/New Zealand" (Roberts and Wills, 1998: 43). The general historical story is that Maori sought the Western technology that the settlers brought to New Zealand. But, if that were true, as Durie says (1993: 35): "Once alienated from their economic base, the land, sea and forest resources, the capacity for technological innovation to work against Maori interests becomes apparent." If so, the knowledge society may not bode well for Maori.

I derive my account and arguments about the nature of technology from Martin Heidegger (1977) and the sources from which I develop my concerns are New Zealand. I believe, however, that my concerns and critiques are capable of generalisation to other western educational systems, because the major official curriculum documents in New Zealand are stated to be based upon 'scrutiny of technology education developments occurring in many other countries' (Ministry of Education, 1995:5). Second, New Zealand and other Western educational systems are also subject to what Lyotard (1984) called *performativity*.

Heidegger and technology

In his essay, *The Question Concerning Technology*, Martin Heidegger commences by saying that in what follows 'we shall be questioning concerning technology' (Heidegger, 1977: 3). At first sight this seems an odd way to talk. Yet the continuous present tense of the verb 'question' is, as we shall see, important for Heidegger's account of the essence of technology. *Questioning* does not imply a *static* question, 'what is it now?,' and a closed off answer, but rather a continuous ongoing way or path, of questioning concerning the essence of technology. By 'essence' then Heidegger does not mean simply what something is *now* but, also, the way in which it pursues its course, the way in which it endures through time, the manner of its 'coming to presence', or the way in which it 'reveals' itself to us, and hence the ways in which we can respond to it. It is not something static which can be ascertained by answering *the* question, 'What *is* technology?,' for that demands a mere temporal and situated, here and now, type of answer. Hence in Heidegger the present continuous sense of the verb 'question' is needed to grasp the metaphysic of technology.

According to Heidegger the way forward is a way of thinking which will lead us through language 'in a manner that is extraordinary'. We should like, he says, to prepare 'a free relationship' with technology and in our questioning the relationship will be free if 'it opens our human existence to the essence of technology' (Heidegger, 1977:3). Only if we have this free relationship with technology, can we respond to it. It is only with this free relationship with technology that we can understand or grasp its essence. Thus if we are to have a free relationship with technology we cannot come to it with any presuppositions - eg, that it is neutral - and we must be prepared to follow where thinking takes us through language, because our ordinary thinking stultifies, or ossifies, or fixes language in accordance with 'ordinary' thinking. To follow this path of thinking will require us to 'respond' to technology, *before* we decide first what it is and then, second, how we are to respond to it. For to respond to it we must have grasped certain things about ourselves, about human being, so that we can 'open' ourselves to the essences of both human being and of technology. This must be a simultaneous and mutual opening up or recognition, and not a temporal response, for human being and technology are in a mutual interrelationship. This is difficult to understand, given traditional philosophical logicist, positivist and Anglo-Saxon understandings of language and logic, and a traditional overt antipathy to metaphysics.

But Kant had opened this possibility with what might be called a constructivist view of knowledge. More recently there has been an onslaught upon the notion that language *represents* or mirrors reality, that there are givens, that science discovers truth, etc. David Hume pointed out that language was not fixed empirically in his famous colour example for, given two shades of colour, one of which I name 'blue', and the other of which I name 'green', there is always a possibility of inserting another colour/shade between the two. What colour is it - blue or green? If I do not classify it, in some other way, then I must make a *decision* if I am to describe or talk about it. Hence, as Körner (1966) argues, all empirical predicates do not operate in a binary fashion in their applications but always in principle require a decision procedure to include or exclude the possible object of application, prior to any application of the concept. Hence given any *x*, if *F* is an empirical predicate then there are at least three possibilities to express the logical relationships between '*x*' and '*F*'; either '*x* is *F*', or '*x* is not-*F*' or '*x* is undecided' (*F* or not-*F*, but not both). In summary empirical predicates do not operate in an exclusive binary fashion in their empirical applications. Yet ordinary

language, bolstered by classical simple two valued logic, tends to support if not enforce this binary notion, and in so doing tends to ossify and stultify empirical concepts.

So Heidegger is asking us to suspend such views as this: to grasp, to a certain extent, the concept of technology but not to close it off (as neutral say): to follow a way of thinking *through* such 'closed off concepts whilst still using those concepts and language; and not to be closed off about ourselves. Not being closed off to ourselves, as the masters of technology say, and not being closed off to technology as neutral say, will permit us to experience the essence of technology. Divested of his form of expression, and the metaphysics, it could be said that Heidegger is offering us a prescriptive account of the concept of technology. Here, as philosophers of education, we should be mindful of the problems and criticisms Dewey was to face with his concept of experience (Dewey, 1916) - caught with the term 'experience' which he wished to use for a very different concept (arguably ridden with a hidden metaphysic!). But this would not do for Heidegger, for we cannot divest his work of his metaphysics and, in particular here, his view of human being, technology and the relationship between the two. With those preliminaries we will now turn to his explicit account of technology.

Heidegger makes the initial point that the essence of a tree cannot itself be a tree which we could encounter, for what we are seeking as the essence of tree is something which pervades all trees and not merely what is obvious or given in a particular tree. By analogy, when seeking the essence of technology we should not seek something which is itself technological but which pervades or dwells in all forms of technology. Nor should we seek something which is neutral for, common and persuasive as this view might be, it 'makes us utterly blind to the essence of technology' (Heidegger, 1977:5). His main argument starts from traditional accounts of what technology is - what he calls the instrumental and the anthropological accounts, but essentially overall these collapse into an instrumental view of technology.

Respectively these accounts claim that technology is a means to an end and that technology is a human activity. Traditionally these two accounts belong together, for to posit ends and procure the means to achieve those ends is a typical human activity. Heidegger says that all of this *instrumental* view is uncannily correct about technology, even modern technology (which he is to contrast with ancient technology), but it is not the *truth* about technology, and it conditions every attempt 'to bring man into the right relation to technology', because we tend to see that relation as one of mastery over instrumental technology, of not letting it get out of hand. (To say something which is correct about an object is not to give the truth about that object - to say that petrol is a fuel for motor cars is correct but it is not to say the truth about petrol - eg, that burning petrol pollutes the atmosphere). And truth, for Heidegger, must be revealed.

But suppose, he now asks, what if technology was no mere means, for saying what technology *is*, as we have seen above, does not get us to the essence of technology, namely that which pervades all forms of technology? Instead we must ask: 'What is the instrumental itself? Within what do such things as means and end belong!' (Heidegger, 1977:6).

First Heidegger criticises the notion that the instrumental is the essence of technology. He commences by drawing a distinction between ancient and modern technology. For him there is a difference between ancient or hand technology (or handcraft) and modern technology. To see the instrumental as the essence of technology is to hide the marked differences between 'ancient' and modern technology. The difference from ancient technology (or handcraft) where what is in nature is (merely!) revealed by a bringing forth, in modern technology there is a *challenging or demanding* of nature. This involves a demand placed upon nature by modern man, that it not merely to *reveal* nature, but to *demand* of nature that it be ordered as standing reserve. To see the essence as instrumental is to see technology as also being neutral. From this perspective there is no good or bad technology, as only the ends to which it is put have value. Heidegger uses the notion of enframing (gestell) to refer to this demanding of nature. His claim is that *enframing* (ge-stell) is the

essence of modern technology; it is 'that challenging claim which gathers man thither to order the self-revealing as standing-reserve' (Heidegger, 1977:19).

In drawing a contrast between ancient and modern technology Heidegger uses the notion of cultivation. The field that the peasant formerly cultivated does not challenge or place demands upon the soil, as 'it places the seed in the keeping of forces of growth and watches over its increase'. But modern agriculture challenges nature: 'agriculture is now the mechanised food industry'. He continues (Heidegger, 1977: 15): 'Air is now set upon to yield nitrogen, the earth to yield gold ore, ore to yield uranium, for example; uranium is set upon to yield atomic energy, which can be released for either destructive or for peaceful use'. Heidegger admits that he is using 'enframing' (ge-stell) in a new sense, different from its more customary sense of 'frame' or skeleton. For him:

Enframing means the gathering together of that setting upon which sets upon man, i.e., challenges him forth, to reveal the real, in the mode of ordering, as standing reserve. Enframing means the way of revealing which holds sway in the essence of modern technology and which is itself nothing technological. On the other hand, all those things that are so familiar to us and are standard parts of an assembly, such as rods, pistons, and chassis, belong to the technological. The assembly itself, however, together with the aforementioned stockparts, falls within the sphere of technological activity; and this activity always merely responds to the challenge of Enframing, but it never comprises Enframing itself or brings it about (Heidegger, 1977:20).

The word 'stellen' in 'ge-stell' means from its two original sources both a setting upon or a *challenging* and, also, permits a presenting or bringing forth of that 'what presences come forth into unconcealment' (Heidegger, 1977:23). Because enframing reveals the real as standing-reserve, and man is challenged to reveal nature as, above all, a standing reserve, Heidegger argues that modern technology is neither merely a human activity nor a mere means within such activity. Enframing is not something that has arisen deliberately, by conscious human agency, and is therefore not of human beings' volition or conscious valuing. As enframing is outside human agency, and 'sent' to us by the real (i.e., being), therefore value does not merely accrue to human agency. Thus both the instrumental view of technology as means to an end, and the ethical enjoinder to master technology as providing the *truth* about technology, as well as the view that human beings set the values concerning technology, are all untenable in Heidegger's view from the essence of technology.

But to answer the question concerning technology in this way - that its essence is concerned with enframing - is still not sufficient. It is not as it stands an adequate answer to the question concerning technology (Heidegger, 1977:23), for we must ask how the notion of technology as 'the real' revealing itself as standing reserve answers such questions as to how this revealing occurs. Is it beyond human doing? Does it happen exclusively to man? And does it happen decisively *through* man? How can we take up or enter into a relationship with technology when it reveals itself to us as standing reserve?

Heidegger says that the questions asked about man's relationship to technology and of the essence of technology come too late if we think that we can enter into any such relationship *subsequently*. This would presuppose a revealing of the essence of technology as standing reserve independently of and prior to any human relationship with it. But the revealing and the relationship must be simultaneous; we must enter into such relationships for the essence to be revealed, for our very experiences and our experiences of ourselves have to be challenged by the essence of technology as standing reserve, for this enframing to 'come to presence' (Heidegger, 1977: 24).

Maori and technology

What was wrong with modern technology, according to Heidegger, is that it reduces humanity to the state of a clever animal, with no obligation to shelter things or to protect their *being*, as everything including humanity is turned into a standing reserve. It is not merely that man causes social and ecological change and destruction, for he does that but that man himself is changed in

this ordering and controlling of standing reserves.' As part of the standing reserve man is merely the clever animal (standing reserve) that orders the standing reserves, including himself. Focussing merely on loss and destruction is itself part of the modern technological stance. Instead, exposing the nature of modern technology shows us that we act unknown to ourselves with gross hubris, both to things and nature but, also, towards other human beings man and modern technology. It was not a challenge in Heidegger's sense of standing reserve, but was constituted by a much more symbiotic relationship revealed in such notions as a different drawing of the distinction between animate and inanimate, the intertwining of human beings and the environment, and hence of genealogy and their conservation of resources. Non-invasion of the environment is an important metaphysical and ethical principle.

Maori have a different metaphysics from pakeha. They draw a different distinction between the animate and the inanimate and they have a different notion of the self. In particular the self is not an isolated atomised individual, external and alienated from Others. Part of the definition of the identity of the self requires one not merely to identify relationships with other Maori but also to include relationships with inanimate 'things' such as trees, forests, and mountains. There is not a sense of the fierce individualism that has surfaced in that version of liberal thought sometimes called neoliberalism or the New Right. There we have the notion of homo economicus, of a highly atomised self which is not defined at all by external relationships, either with human beings or with the environment. In modern neoliberalism this becomes what I call the *autonomous chooser* (Marshall, 1996).

But this is not the only view of the self to be found in western thought. In opposition to these notions of a logically simple and atomised self there is a notion of the self which, stemming from Hegel, is to be found, for example, in the writings of Simone de Beauvoir and in the latter writings of Jean-Paul Sartre. In Beauvoir the self is to be defined in relation to the Other. It is the recognition by others of myself as a *subject* of consciousness and not as a mere object to be appropriated and used for their purposes that is needed to constitute my identity. She traces these notions in her early novels *She Came to Stay*, and *The Blood of Others* and, later, Sartre is to abandon his notion of the self as fundamentally alienated from the Other and move closer to Beauvoir's position. Thus within the Western tradition there are metaphysical positions which stand opposed to neo-liberal disconnected and atomised individuals who are not merely capable, through gross hubris, of conceiving the other as standing reserve, but who seem to act in such ways.

In Maori metaphysics then there is an assumption of the interconnectedness of all things and a refusal to separate actions from their possible consequences. Briefly, and very generally: "mauri (an abiding place of divine power) illuminates the importance given to unity with its application to the living and the 'inanimate'. The value of continuity through unity finds expression in the concept of whanaungatanga. Through whanaungatanga, an understanding of the ties that unite the affinities interdependencies and interrelationships between living and non-living, between the past, present and future can be understood" (Durie, 1997: 31). "Thus the whakapapa or genealogy of all within the Maori universe joins people together, and binds them to the total tribal network of territory, landforms, buildings and people in a web of interdependency" (Durie, 1993b:2, quoted 1997, p. 39). With such metaphysical assumptions it would clearly then be unethical to invade the environment.

What this means is that the environment cannot be seen by Maori as a standing reserve, to be called upon. It is not a resource to be stored, like sacks of coal in the coal shed. Maori are themselves interconnected and, in turn, they are connected to the environment. "Therefore it is not sufficient to refer only to the outcomes of technology development but also to the context in which the process of technology development takes place" (Durie, 1997: 31). What does modern technology do to the context in which it is deployed not merely to the environment but also to the human beings who do not merely own or inhabit that environment but, are themselves, fundamentally connected to that environment?

For Maori then, the human condition cannot be seen separately from the overall environmental and societal context in which it arises. Therefore, to do harm to any part of the environment, is to invade or to harm *oneself*, and the future for oneself and for one's people, and not merely to the environment. For Maori then interventions into the environment were conditional upon a strong philosophy of non-invasiveness (see further Durie, 1997).

These are the types of questions posed by the deployment of modern technology to Maori in Aotearoa. They clearly touch on important issues that affect human beings and their intertwined relationships with the total environment - are we merely clever animals? Obviously the curriculum framework documents do not get to the heart of these matters about what it is to be a human being in a symbiotic relationship with an environment, for their questions are unfortunately, to say the least, framed to require *technicist* answers and technicist treatment.

Conclusion

Does this exposure of the enframing nature of technology rest only at the level of critique? Not so for Heidegger, for we can accept technology and use it without being 'claimed' and warped into notions, beliefs and procedures which are enframing. Here he places emphasis on the importance of differences and margins, where enframing fails to operate, or may not operate, and where resistance and alternative practices can permit freedom from and alternatives to, modern technology. Those familiar with the later work of Michel Foucault (eg, Foucault, 1983) and his notion of how it is possible to escape the deterministic and fatalistic implications of modern power, will recognise his indebtedness here to Martin Heidegger. In general, those familiar with poststructuralist emphases on the politics of difference, the politics of resistance, its anti-colonialism and its anti-globalisation thrusts, may discern some way forward. But whether such 'solutions' to enframing are adequate or even possible is, of course, another matter.

Heidegger's arguments expose the non-neutrality of technology to Western metaphysics in ways which are more akin to the stance of Maori relations to Others and the environment. There are parallels between the accounts of man and his relationships with the environment. But the arguments may have little impact upon the knowledge society and its notions of transmissible knowledge. But if the reference of pixels on the screen in electronic communication is no longer to the real world but to simulcra (Poster, 1990), then the knowledge society becomes metaphysically and epistemologically divorced from the real world.

Maori are left in a double bind then for the symbols of knowledge no longer have reference to a real world to which they reasonably claim a spiritual affinity. This new technology may then doubly disadvantage them, for they are now doubly disadvantaged from their original economic base. And the new economic base is simulcra (Poster, 1990).

II Technology in the New Zealand curriculum

The New Zealand curriculum framework

In her Foreword to *The New Zealand Curriculum Framework* (NZCF) the then Secretary of Education, Dr. Maris O'Rourke, says that the NZCF (MoE, 1993:1):

Promotes new emphases in learning areas which are important to the country's health and growth, such as technology, second language learning

NZCF is said to describe 'a framework for learning and assessment' which defines the national curriculum (MoE, 1993:3). It states the *principles* for the direction of all teaching and learning, specifies seven *essential learning areas* and sets out the *essential skills, attitudes and values* to be developed in this curriculum. Elsewhere I have commented that the principles are essentially instrumental if not outright economic, that the notion of learning areas is very unclear - are learning

areas just an example of, or similar to, Hirstean forms of knowledge, for example. If Technology is listed in the Essential Learning Areas section of NZCF as one essential learning area, elsewhere in the document it seems to be seen instead as a neutral means to learning in the other essential areas. This uncertainty as to the status of Technology is an important point, and one to which we will return below.

There is a considerable down playing of knowledge and understanding - they do not occur as important principles in the Principles section of NZCF for example. Nor is there any discussion of the nature of knowledge. Instead there is a replacement of knowledge by skills and information. Knowledge is informatised, and therefore the general principles by which we make sense of information (Peters, 1966), are absent from the curriculum document. In its implementation this curriculum may leave many people at the mercy of an educated managerial elite (Marshall, 1997a,b). Furthermore there is no commitment in this document to knowledge, *as knowing some thing*, as a value, but only to information and the transmission of information. Instead the major educational value ascribed to is the learning process. There is also a stunning absence of such holistic and traditional liberal values as the good citizen, the autonomous person, etc., and any awareness of how the self will be constituted differently in the mode of information (Marshall, 1997a,b; 1998b). Not only is the self affected but also social bonds which, instead, will become 'informatised' (Lyotard (1984).

Notwithstanding these important issues our concern here is with communications and information technology and their subsumption under the general category of Technology, said in NZCF to be *one* of the essential learning areas.

Technology in the New Zealand Curriculum Framework

The second technology curriculum document, *Technology in the New Zealand Curriculum* (TNZC) (MoE, 1995), is the first New Zealand national curriculum statement to have been developed in the area of technology under the reforms. This document is said to have been produced from a developmental phase 'which included scrutiny of technology education developments occurring in many other countries'. It is not therefore a document produced in some idiosyncratic colonial environment, and much that might be said about it can be said about those documents on technology from other countries which make similar assumptions about the nature of technology.

As has been said above technology was introduced into NZCF either as a separate learning area, as something which was like a Hirstean form of knowledge (Hirst, 1983), or as a neutral means to enable learning in the other learning areas. In TNZC however, it is the instrumental theme of neutral means which is pursued in Dr. Maris O'Rourke's introduction. She states that the development of technology in the curriculum is 'part of a broad initiative aimed at improving student achievement', and that it 'aims to develop technological literacy through three integrated learning strands to enable students to participate fully in the technological society and economy in which they will live and work'. Furthermore the technology curriculum 'seeks to enable and empower students with the know-how they will need to make informed choices about technology, and to be the technological innovators of the future' (MoE, 1995:5). The notion of technology as neutral means to societal and economic ends, and that one can choose between the means, is clearly an instrumental approach to technology.

Yet immediately in this document in the first section entitled '*Introducing Technology*' we meet this statement which almost suggests an *essence* to technology (MoE, 1995:6):

Technology is a creative, purposeful activity aimed at meeting needs and opportunities through the development of products, systems, or environments. Knowledge, skills, and resources are combined to help solve practical problems. Technological practice takes place within, and is influenced by, social contexts ... (for we) ... live in a technological world. Technological practice affects our environment, our standard of living, and our quality of life. Technology plays an

increasingly important part in our health care, choices of food, transport, and the very functioning of our society. The technologies used today have built on the ingenuity, traditions, observation, and knowledge of people who, throughout history, have sought to improve their lives, solve problems, and satisfy their needs and wants This process of continual incremental development and testing is essential for people to meet challenges and fulfil their expectations.

There is a suggestion here that technology is deeply embedded in our social system and the functioning of our society and thereby is not merely a means to some other ends because it is deeply embedded in our society, in our forms of life to use a Wittgensteinian phrase. But this suggestion is faint for the instrumental tone quickly reasserts itself because, it is said, technology 'helps people make new connections', 'add value to traditional products and services and create new ones to improve people's quality of life, and help New Zealand's continuing development as a successful nation' ... for ... 'New Zealand is rich in energy resources and primary products which can be processed into higher value products, through ideas and products yet to be developed'. Technology then, under Lyotard's notion of performativity (explicitly in the text is the phrase: 'New Zealand's continuing development as a successful nation') presents us with a challenge, a challenge of mastery over resources, of how to extract, store, and invest in them, and this challenge it is said, 'provides exciting opportunities for all students' for 'technology is challenging and rewarding and open to everyone'.

So this faint grasp at an essence is abandoned and technology is tempered as being neutral and something under our *mastery* - the instrumental view of technology to which Heidegger objects, because it masks technology 's challenge of standing reserve. The document continues, turning next to technology education (MoE,1995:7):

Technology education is a planned process designed to develop students' competence and confidence in understanding and using existing technologies and in creating solutions to technological problems. It contributes to the intellectual and practical development of students, as individuals and as informed members of a technological society.

The aims of this education are stated to be (MoE, 1995:8):

... to enable students to achieve technological *literacy* (my emphasis) through the development of:

technological knowledge and understanding

technological capability

understanding and awareness of the relationship between technology and society

Students are, however, to face environmental questions. But this is restricted to the investigation of options in relation to 'authentic' problems, so that they can appraise the appropriateness of technological solutions to environmental problems. But the theme which is pursued is still that technology is neutral, and certainly nothing like a challenge to humanity in Heidegger's sense. At best technology carries the sense of challenge as seen in video advertisements where Ed Hillary climbs mountains. That is a challenge from nature but, again, hardly Heidegger's challenge.

If students are to become technologically literate and be aware of the interplay between technology and society (past, present and future) they are also to become empowered in choosing the appropriate technology and 'feeling empowered to contribute to a technological society'. But being aware of the interplay of technology and society and empowering students are but two of the nine listed attributes of technology literacy (MoE, 1995:9). The remaining seven, if we are to stay with the metaphor of literacy, are rather like the characteristics in literacy which are those of a *functional* literacy. Functional literacy permits one to operate within a society but it tends not to provide a real literacy which permits one to read into the edicts and requirements of how to function in society the underlying assumptions and power structures that constitute that society. Functional literacy then tends to disempower people. In what sense then can technological literacy be

empowering as opposed to merely being functional? What do our curriculum planners offer us in this document on technology on more than a functional form of technological literacy?

When we turn in TNZC to the section on Technology and Society (MoE, 1995:41) we are told that 'understanding the nature of the relationship between technology and society is vital to technological practice', acknowledging that 'no technology is 'value-free'. But this is to acknowledge only that in its *applications* that technology is not value free. This is far from an acknowledgement that in essence technology is value laden and therefore *not* neutral. Thus the whole section on technology and society does not question the orthodoxy that technology is, per se, or in its very nature or essence, *neutral*. Instead it is merely a question of resolving the issues that arise from 'the culture, beliefs, and values that influence decision making in that society'. Thus the values that make technological choices value laden are those that inhabit the particular contexts or situations, and these must be made explicit because these factors are 'sometimes overlooked'. Nowhere is it suggested that technology per se should be questioned. In other words the technology curriculum does not encourage students to raise themselves above the level of a functional technology literacy. Just as functional literacy does not provide the 'tools' to question the structures than underlie functional literacy nor also does technology literacy as envisaged in these documents provide a technological literacy that provides a questioning concerning technology.

This is made clear explicitly in TNZC (MoE, 1995: 42-84) where the achievement objectives for technology education are stated and quite detailed suggestions are made about technological literacy by the provision of explicit examples for learning and achievement. In the examples provided in the subsections which are devoted to *Technological Knowledge and Understanding* students are invited to describe the technology, to identify similarities, differences and key features within the examples (egs, letterboxes, items of rubbish, a festive table, and bicycles), and to explore their *Technological Capability*.

In the *Technology and Society* section of these examples students are required to consider such factors as: "reasons for different styles and shapes: reasons for preferences; comparative and historical studies of impacts upon society; ecological arguments about local impacts (eg, electronic transmissions), endangered species: and examine potential markets. This is far from an exhaustive list but the point is clear, no matter how important and well intentioned these suggestions on technology and society are, the essential Learning Area - TECHNOLOGY - is concerned with providing the equivalent of a functional literacy only and *not* a critical technological literacy.

It hardly needs stating that in Aotearoa/ New Zealand the relationship of the indigenous people - Maori - towards technology and nature was not that of modern man and modern technology. It was not a challenge in Heidegger's sense of standing reserve, but was constituted by a much more symbiotic relationship revealed in such notions as genealogy and their conservation of resources.

Conclusion

Heidegger was critical of those who saw technology as dangerous merely because it exemplified instrumental reason. For Heidegger what was wrong with modern technology is that it reduces humanity to the state of a clever animal, with no obligation to shelter things or to protect their *being*, as everything including humanity is turned into a standing reserve. So it is not merely that man causes social and ecological change and destruction, but that man himself is changed in this ordering and controlling of standing reserves. Focussing merely on loss and destruction is itself part of the modern technological stance. Instead, exposing the nature of modern technology shows us that we act unknown to us with gross hubris, both to things and nature, but also towards other human beings, as humans themselves become part of the standing reserves.

So what does this exposure of the enframing nature of technology achieve? Is it mere critique? Not so for Heidegger, for we can accept technology and use it without being 'claimed' and warped into notions, beliefs and procedures which are enframing. Here he places emphasis on the

importance of differences and margins, where enframing fails to operate, or may not operate, and where resistance and alternative practices can permit freedom from and alternatives to, modern technology. Those familiar with the later work of Michel Foucault (eg, Foucault, 1983) and his notion of how it is possible to escape the deterministic and fatalistic implications of modern power, will recognise his indebtedness here to Martin Heidegger. In general, those familiar with post-structuralist emphases on the politics of difference, the politics of resistance, its anti-colonialism and anti-globalisation thrusts, may discern some way forward. But whether such 'solutions' to enframing are adequate or even possible is, of course, another matter.

III. Bright futures and the knowledge society

Introducing the knowledge society and the knowledge economy

In launching the *Bright Future Package* in 1999, outlining a set of new policies to enable New Zealand to prosper in the oncoming knowledge society and knowledge economy, the New Zealand government claimed that in order to approach the issues and opportunities that will face New Zealand in the 21st century we need to bring together "the education, research, business and government sectors" (Shipley, 1999). In his contribution to *Bright Future Package*, Max Bradford (Minister of Enterprise and Commerce and Tertiary Education), said that the world is changing into a global market place as we go through a revolution in information and communications technology: "increasingly what is in our heads is becoming as valuable as what's in our pockets". In what follows the term '*Bright Futures*' will be used to refer in general to the above document and to two further documents on this topic from the Ministry of Research, Science and Technology (MoRST, 1999) and the Information Technology Advisory Group to the Minister of Information and Technology (ITAG, 1999).

Bradford is talking about the knowledge economy, which is a term "used to describe an economy where the value tends to be created by people's knowledge rather than investment in plant and natural resources or straight physical labour". According to the Ministry of Research Science and Technology common features of the knowledge economy include (MoRST, 1999):

- knowledge and information as major sources of creating value
- rapid changes in technology
- greater investment in research and development
- greater use of information and communications technology
- growth of knowledge-intensive businesses
- increased networking and working together
- rising skill requirements.

MoRST reiterates Bradford's point that knowledge is the key to creating wealth and improving the quality of life in this 'knowledge revolution'. The knowledge revolution is driven, MoRST says, by:

- globalisation of the world's economies which has fuelled competition and spun-ed the gathering of knowledge to get ahead economically
- the technologies for gaining, sharing and applying knowledge which are changing rapidly - for example the rise of computers and the internet
- the growing role of research, science and technology in creating knowledge to solve business, social and environmental problems
- knowledge growing at exceptional rates. Whereas the resources of the industrial society, for example fossil fuels, tended only to be used once, existing knowledge can be used to create new knowledge, speeding up the rate at which knowledge is created.

Another closely aligned term is 'the knowledge economy'. In a submission to the Government from the Minister of Information and Technology's Information Technology Advisory Group (ITAG, 1999) neo-classical and 'modern' economics (new growth theory) are contrasted. They state that the former recognised only two factors of production - labour and capital - whereas the latter not only adds knowledge but also recognises *knowledge* as the key factor. In neo-classical economic theory knowledge, productivity, education and intellectual capital were seen _as factors which were *external* to economics. Now knowledge and technology, with their increased ability for rapid production, have become a third factor internal to 'leading economies'.

Some economists make a stronger claim to the effect that knowledge is now *the* basic form of capital so that: economic growth depends upon the accumulation of knowledge; technology can raise the return on investment which, if reinvested, makes technology more valuable; technological breakthroughs can create technical platforms for further innovations, which in turn become the drivers of economic growth.

However economic growth doesn't just happen. What is needed is immense investment in technology and human capital for the development of knowledge. As

New Zealand companies need to better understand and use the concept of intellectual capital" so also must they "unlock the value of their hidden assets, such as the talent of their employees, the loyalty of their customers, and the collective knowledge embedded in their systems, processes and culture. They must learn to turn their unmapped, untapped knowledge into a source of competitive knowledge. (ITAG, 1999)

Clearly education has a role to play here and, it would appear, this has become an allotted role for education in the first years of the 21st century as *Bright Future Package* heralded major advances and scholarships and the priming of teachers for the immanent knowledge economy.

Initial comments

So just what are these *Bright Futures* type policies about? Listening to the political rhetoric in just these three documents (there are many others) it would seem that little had happened to prepare us for the knowledge society and economy in the last two decades, and that new and urgent policies are required. This is far from being the case for there had been a raft of earlier policies in the major restructuring of the New Zealand economy including education (at all levels), which began as long ago as 1988. But the groundwork was laid even earlier in education with a number of major criticisms of a traditional liberal education system which, by the then international criteria, was performing well. But all systems in Western education in the developed nations were to undergo major critiques and major structural changes as precursors to the knowledge society and economy, rapidly moving capital and globalisation.

In order to make sense of the opening remarks and to understand just what these new *Bright Future* policy initiatives are about we will need to consider a number of notions or concepts. These, and in the order in which they will be discussed, are:

- neoliberalism
- knowledge, information and skills
- technology and the self
- vocationalism and liberal education
- globalisation
- new managerialism

Neoliberalism

The structural changes which have taken place in New Zealand since the mid 1980s are usually described as neoliberal, sometimes by the slightly wider concept of *new right*. New right ideology is made up of two major elements: a neo-liberal element, which is committed to the free-market and to the substitution of market-like arrangements for the state; and, a neo-conservative element, which is committed to fundamentalist and conservative moral values. These elements are united by the belief that state intervention to promote egalitarian social goals has been responsible for the present economic decline, and has represented a violation of individual rights and initiative. From this combined view, the new right believes that equality and freedom are incompatible and that freedom construed in individual and negative terms (i.e., freedom from intervention) is indispensable for economic vitality and well-being. The theoretical underpinnings for this view are to be found, in part, in a contemporary rejuvenation of classical liberal economic theory which privileges both the market as an institution above all others, and market values over all other values (see further Peters, Marshall and Massey, 1994).

The main theoretical elements of the new right can be summarised as follows:

1. A commitment to the free market which involves two sets of claims:
 - a. claims for the efficiency of the market as a superior allocative mechanism for the distribution of scarce public resources:
 - b. claims for the market as a morally superior form of political economy.
2. A return to a form of individualism which is competitive, 'possessive' and construed in terms of consumer sovereignty.
3. An emphasis on freedom over equality where 'freedom' is construed in negative and individualistic terms. Negative freedom is freedom from state interference which implies an acceptance of inequalities generated by the market.
4. An anti-state, anti-bureaucracy stance. The attack on 'big' government made on the basis of both economic and moral arguments, which tends to lead corporatisation and privatisation strategies to limit the state.
5. A moral conservatism which is based on fundamentalist and individualist values which are anti-socialist, anti-feminist and anti- Maori.

In educational terms commitment to the free market involves the belief that 'excellence' and 'quality' in education will be served, and scarce public resources better utilised, by adopting market-type arrangements such as zoning, institutional decentralisation and competition between schools. That the market is seen as morally superior is evidenced by the opportunity to *choose* between schools, and the accompanying claim that this promotes freedom.

The assumption here is that society is constituted by competitive and possessive individuals, capable of making choices which are in their best interests. For such individuals education becomes a commodity purchased by individuals for individuals, and utilised by those individuals for their own personal advancement. Obscured in this notion of individualism and education are the beliefs that knowledge is shared and the outcome of agreement and social interaction, and a more traditional belief that education is not only for the good of the individual but also for the good of society, where society is construed not merely as a collection of individuals but as a cohesive, intrinsically social, community. Contrasted here are the notions of society as an atomistic, fragmented, hedonistic collection of self-interested individuals and that of society as a community based upon shared interests (Dewey, 1916), public goods, and the notions of altruism, empathy and respect for persons.

The concepts of freedom and equality pose tensions in liberal thought even though the notions of liberty, equality and fraternity were the catch-cry of the French Revolution and of the Enlightenment. Nevertheless these are contested concepts. In the new right framework freedom is interpreted in the negative sense of freedom *from* and the positive sense of freedom *to*, is generally excluded. Thus when freedom is extolled in the call for less state intervention in the welfare state and education, little is said about how disadvantaged groups are to effect their choices, which they

are said to be free to make in the competitive markets of education, and of course health. Equality is also a contested concept, as we have seen above. Whilst the new right framework makes some concessions to equality of opportunity, in general, freedom from overrides fully-fledged notions of equality that have inspired various versions of democracy. For some new right thinkers (eg., Strike, 1982) even notions of democracy are contrary to neo-liberal thought because they might involve constraints upon that negative sense of freedom. In Strike's case this has considerable implications for what can be offered in education, particularly to ethnic minorities, who would wish to preserve their language and culture as a self-determining right. Such preservations for minorities require the understanding if not assistance of members of the majority group and this may require induction of the young into languages and cultures other than their own, and contrary to the wishes of their parents.

The attack on 'big' government (ie., the welfare bureaucracy) is reflected in the devolution of responsibilities from former state agencies, eg., the now defunct Department of Education, to schools and other educational institutions. An emphasis on knowing the per capita costs of education can provide structures and mechanisms which could lead ultimately to the full privatisation of education. The point here is that once it is known what the true cost of educating an individual is, then it matters little who pays the bill - the state or the individual parents.

Finally, the morality underlying new right thought is inherently conservative. Either conservative and traditional values are imported hand-in-hand with the revision of this individualistic doctrine, or morality and social justice is deemed to be the outcome of exchanges generated by the market (Hayek, 1978). This conservative tradition is exemplified clearly in the Sexton Report on Education produced by the New Zealand Business Roundtable in 1991. There are blatant appeals to objective views on knowledge and values, and an overt attack upon cultural differences. This ethnocentrism is a result of holding and universalising British colonial attitudes. The effects upon education of adopting the Sexton Report would have been serious for disadvantaged groups in New Zealand, reinforcing a monocultural, middle-class and male-oriented set of values and institutions (Marshall, Peters, and Smith, 1990).

An evaluation of the educational reforms of the late 1980s in New Zealand requires an understanding of the wider policy context in which the principles of neo-liberal thought are clearly exposed.

Knowledge

The type of knowledge which the knowledge society 'needs' can be identified as 'surfacing' as early as 1993 in *The New Zealand Curriculum Framework* (MoE, 1993). There we find a move away from traditional approaches to knowledge and notions of disciplines or subjects defined by different kinds or forms of knowledge (see the work of Paul Hirst on forms of knowledge - eg, Hirst, 1983). In Hirst's work forms of knowledge can be structured by key concepts, general principles, and different ways of establishing truth claims (cf. geometry with history). From this philosophical position what counts as knowledge depends upon *epistemological* issues.

In the proposals for curricula for schools in that document there is a silence regarding basic and fundamental philosophical questions about the nature of knowledge. Central to a consideration of curricula are *epistemological* questions about what counts as knowledge, how it is defined and controlled, and whose knowledge is selected for inclusion - who decides, and on what basis? What counts as important knowledge also defines what is seen as *not worth knowing* and, consequently, the interests of different gender, class and ethnic groups may be unequally represented in what is, and what is not, included in the curriculum. At least philosophers, since at least the time of Plato, have traditionally seen such questions as important!

Philosophers, traditionally, have also drawn a distinction between knowing *that*, in the sense of knowing that something is the case, and knowing *how*, that is with knowing how to do things in

practice. The distinction can be illustrated, for example, between knowing that it is raining outside and knowing how to ride a bicycle. In the New Zealand literature there is a very explicit emphasis on getting skilled, wherein learning as a *process*, and of knowing *how to do* things, has replaced knowing some *content* or thing. No longer is the curriculum presented in terms of disciplines but in terms of learning areas, or 'getting skilled in those areas, and of knowing how to do things within those areas. In the Ministry documents the justification for these learning areas, is either blatantly pragmatic or rests on economic considerations. The term 'knowledge' is in no way employed to justify these areas, but at best becomes some pragmatic outcome of skills and information acquisition in these areas.

In the areas of attitudes and values in the curriculum documents, it is an attitude towards learning (as a process) that is valued and not an attitude towards knowledge (as something known). It is the processes, the ever on-going learning and reskilling processes, that are seen as of paramount importance. There are parallels here with the support for approaches to the curriculum which can be called, broadly, constructivist. In constructivist approaches to pedagogy what is important is the process of construction, and not the object constructed, especially in radical versions of constructivism (see *Access*, 13(2), 1995).

All students must study in the essential learning areas: language and languages; mathematics; science; technology; social sciences; the arts; and health and physical well-being. These essential learning areas are said to be broad categories of knowledge and understanding, which take into account the common curriculum experience of schooling today, both in New Zealand and overseas. But how these categories have been developed is not clear. If they are not subjects per se, are they merely descriptive of what goes on? If so, to talk of the curriculum being directed by the principles seems a little inflated. Curriculum principles should be *principled*, providing general grounds for evaluation of what should be in a curriculum. But the list of essential learning areas seems more like a list, and a tick-off list at best. There is no rationale based upon a coherent notion of knowledge provided for the essential learning areas in the alleged principles.

Knowledge has in effect been replaced by *skills and learning*. Everything which might have been seen as obtaining knowledge - an *object* of an activity - seems to have moved into an activity mode, where what is important is a *process*. Knowledge, in the sense of knowing that something is the case, has been replaced by knowing how, with the explicit emphasis on getting skilled, and learning as process has replaced knowing something, in the notion of learning areas, getting skilled and in the area of attitudes and values (MoE, 1993: 21). It is an attitude towards learning (as a process) that is valued and not an attitude towards knowledge (as something known). It is the processes, the ever ongoing learning and reskilling processes, that are seen as of paramount importance. The world is in continual flux, everything is in change - *viva la change*.

But that is in part because the outcome of all of this is not knowledge but *information*. And because it is merely information it has to be continuously 'relearned', readjusted and restructured to meet the demands of the consumer in the service of the new society in the Age of Information.

These points are clearer in MoRST (1999). MoRST talks about different kinds of knowledge, introducing this terminology: know-what and know-why; know-who; know-where and know-when. According to MoRST know-what or knowledge about *facts*, ie, information, is nowadays diminishing in relevance. This is contrasted with know-why, understanding, or explanatory knowledge about the natural world, society, and the human mind. But this contrast is essentially the difference between *information* and *knowledge*, which was drawn above. If know-what (ie, information) is no longer important why the emphasis in NZCF on information? In other words information per se is not really important. Why then the emphasis on information and skills required of young people so that they can acquire information?

In my view a possible explanation apart from general confusion is that information is important in one sense in that it is part of what can be sold but deeper knowledge and understanding is required to continually develop new information to sell on, and this is explanatory knowledge or 'know-why'.

But this latter kind of knowledge is scarcely mentioned in NZCF. But a possible outcome is two (at least) kinds of persons. Thus there will be mere producers of information - the beavers who continuously work information which is not in itself important as it will be turned over almost immediately. What of those who develop Know-why? Is that to be the province of a very highly educated elite? Politically and educationally something needs to be said about this potential for a two tiered education system, producing beavers and an educated elite.

Know-who "refers to the world of social relations and is knowledge of who knows what and who can do what" as "knowing key people is sometimes more important to innovation than scientific principles". Know-where and know-when are important in a flexible and dynamic economy. The subsumption of knowledge to economic principles could scarcely be more blatant. But at least MoRST has done what NZCF could not do and that is talk of *Knowledge* in the strong sense of understanding and its critical importance. They finally refer to know-how or skills.

Skills

When *The New Zealand Curriculum Framework* is searched under the skills section, what is found again is information. It is said in that section that students will (MoE, 1993: 18):

- identify, locate, gather, retrieve and process information from a range of sources;
- organise, analyse, synthesise, evaluate and use information;
- present information clearly, logically, concisely and accurately;
- identify, describe, and interpret different points of view, and distinguish fact from opinion;
- use a range of information-retrieval and information-processing technologies confidently and competently.

Students are also meant to have problem-solving skills. While these seem to be the normal liberal educational set of critical skills, part of the educated person's skills, what they are given to operate on is the problem. Whilst it is said that fact should be distinguished from opinion, that 'endeavour', however, rests in the mode of information and, on the schema of skills outlined. It would amount to testing bits of information against other bits of information because the fundamental concepts are in the information mode. As we have seen there is no attempt to distinguish information from knowledge (or in MoRST language, knowing facts from knowing-why) or any 'flash of insight' that these notions might be different. Indeed it is Knowledge or knowing-why which may well be needed to test information.

R S Peters (1966) made the point on education that information without knowledge and understanding of a general theoretical kind was worthless. What is lacking in an education which concentrates on information (know-that), is that general theoretical understanding (know-why), to which Peters draws our attention, which permits information to be critically assessed (and, for Peters, even understood). Another point is that the general knowledge and understanding, which Peters points us towards, is to be located in modern technology in the software and hardware, and cannot, therefore, be subject to criticism, as it is presupposed in any 'critical' approach within the programme. In fact the general knowledge and understanding that Peters made much of becomes redundant for many operators and users of knowledge, but at tremendous critical, and personal, cost.

At best there is a demand for *quality* of information in a cry for fact, but quality of information will be decided by the consumer not the provider. It is use value which over-rides issues of *truth*, and it is the consumer in the information economy who will decide. Within the New Zealand educational scene this point has been made very clearly by the neo-liberals and by the New Zealand Qualifications Authority (Marshall, 1993).

Vocationalism and liberal education

A traditional distinction

Whilst it might be thought that we are entering a new age of vocationalism in education, it will be argued that we are not, at least if we understand the issue in a traditional manner in which vocational education is to be defined *against* a liberal-art-humane education. This is no longer the case for we are entering a *total* education and training culture in which the vocational, and business values, so permeate the culture that 'vocationalism' has little or no meaning (Marshall, 1997a). Because it is total there is no *other* form of education in the realm of educational discourse to define it against. Nevertheless the issue remains, for even if liberal education appears hidden or occluded by vocationalism's demands, it may still be drawn forward, out of the darkness so to say, by a suitable critical problematic.

Arthur Wirth puts the traditional liberal-vocational issue on schooling as follows (Wirth, 1988:5):

the choice . . . is whether schools are to become servants of technocratic efficiency needs, whether they can act to help men and women humanise life under technology.

The distinguished British philosopher, Bertrand Russell, believed this distinction to be mistaken. He argued (Russell, 1926: Chapter 1) that education had always had a vocational element, and that the distinction between the ornamental and the useful in education was spurious. But he also believed that education was best served by the development of creative powers through rigorous study in the disciplines. Dewey also believed the distinction to be spurious, but for different reasons (Dewey, 1916).

Dewey saw the antithesis between liberal-humanistic education and vocational education as an outcome of a number of several other closely aligned dualisms (Dewey, 1916: 306). According to him these dualisms were "deeply entangled ... with the whole subject of vocational education" (loc cit), and had to be collapsed. Instead he argued for the importance of technology, and because in this new vocationalism we are entering what can be called the mode of information (Poster, 1990), we will look at how he attempted to collapse this dualism and 'harness' technology for the development of intellect, whilst at the same time dismissing the view that we should become servants of technocratic efficiency needs.

Dewey on vocationalism

Dewey acknowledged that: "The demands of an industrialised and technological society cannot be ignored"(Dewey, 1935: 89). But how those demands were to be met was another matter, as he resisted narrow versions of vocationalism most strongly. Like Dewey I believe that there must be some relationship between education and the world of work. However he sees the relationship as being necessary (Dewey, 1916: 2):

there is the necessity that these immature members (of society) be not merely physically preserved in adequate numbers, but that they be initiated into the interests, purposes, information, skill and practices of the mature members: otherwise the group will cease its characteristic life (author's enclosure).¹

Because of the complexity of modern life Dewey believed that schools are necessary for this education to take place. He is proposing therefore a strong, or causally necessary connection between education and schooling, and the social world, including the world of work. Whilst Dewey accepted the need for the reform of schools and was part of a general reform movement, he parted company quite strongly with an element in that 'movement' which was advocating a strong vocational element, including separate vocational schools. Dewey's opposition to separate vocational schools was both social and political as well as educational (Dewey, 1915: 42):

The kind of education which I am interested in is not one which will adapt workers to the existing industrial regime; I am not sufficiently in love with the regime for that. It seems to me that the

business of all who would not be educational time servers is to strive for a kind of vocational education which will first alter the existing industrial system, and ultimately transform it.

He believed that the right *occupation* was the key to human happiness (Dewey, 1916: 308), and that this was not something that one could be adapted to, or drafted into like a slave. Given that a person could find out 'what one was fitted to do' then:

education *through* occupations consequently combines within itself more of the factors conducive to learning than any other method. It calls instincts and habits into play; it is a foe to passive receptivity. It has an end in view ... Hence it appeals to thought; it demands that an idea of an end in view be steadily maintained so that activity cannot be either routine or capricious the only adequate training/or occupations is training *through* occupations.

If the most efficacious learning was to take place *in* occupations, then schools, could not easily, at that time, provide the technology of the workplace. Dewey saw the most advanced technology as exemplifying the most advanced *problem* solving of the day, and that the young could be introduced to this technology without either *preparing* them for a future occupation or *adapting* them to the world of work. But how were the young to be "introduced" to a workplace which they were meant to be able to transform?

At best, he believed, one can only have a sketch for use in future directions, or an outline of the field in which further growth is to be directed, as one cannot prepare in a determinate way for a future which can only be indeterminate. If a rigid education which hampers growth is to be avoided, preparations for vocations can only be *indirect* rather than direct, Dewey argues. If not, people will be left (loc cit): "in a permanently subordinate position, executing the intelligence of others who have a calling which permits more flexible play and readjustment".

What can schools do then? Here, as elsewhere in Dewey, problem solving and scientific method (the theory of inquiry - Dewey, 1938) have much of the burden to carry. Dewey believed that technology had increased the intellectual and educational possibilities of industry, whilst at the same time the industrial conditions of work had narrowed the educative potential of the workplace (Dewey 1916: 314). The intellectual possibilities and educative potentiality of industry had been enhanced by technology which represented for Dewey, problem solving at its most advanced intellectual state. Because the conditions of industrial work had been narrowed the "burden of realising the intellectual possibilities inherent in work is thus thrown back on the school" (loc cit). It was the school then that would have to provide, through the reconstruction of the educative experiences of the young in technology, the transformation(s) needed in the world of work.

For Dewey this required the gradual reconstruction of school methods and materials so as to utilise the best of modern technology and the problem solving potential inherent in educational activities associated with that technology. This was not to make the schools an adjunct of industry and commerce and to acquiesce in the "untransformed, unrationalised and unsocialised phases of our defective industrial regime" but, of utilising the intellectual problem solving potential inherent in modern technology, "to make school life more active, more full of meaning, more connected with out of school experience" (Dewey, 1916:314).

This was not then to give the young a mere technical proficiency which would promote technical efficiency in the carrying out of the plans of others but, rather a *competency* which extended insight into its social bearings and permitted an efficiency in formulating and carrying out one's own plans. The transformed industrial and social order would have been, for Dewey (1916: 316):

a society in which every person shall be occupied in something which makes the lives of others worth living, and which makes the ties which bind people together more perceptible ... It denotes a state of affairs in which the interest of each in his work is uncoerced and intelligent....

Another concern of Dewey (1916: 318) was that a narrowly conceived approach to vocational education would perpetuate social divisions and in a hardened form, for both the employers and

the employees would be intellectually limited. This could leave the employer class confined to issues of profit and power, and the employee class concerned only with monetary return from their labour. This would involve a limitation of intelligence to "technical and non-humane, non-liberal channels."

Dewey's solution then is to reject the dualism between the liberal-humane and the vocational. Properly conceived the liberal-humane and the vocational merge through the rational problem solving of technology. The autonomous person must choose a form of vocational education, but it was a form in which rationality was writ large in the advanced problem solving potential of modern technology. To put it another way, faced with a question similar to Wirth's opening question above, namely should I pursue a liberal arts curriculum or a vocational curriculum there can be no answer. There can only be one meaningful option - that of the vocational curriculum as envisaged by Dewey, where the canons of rationality are deeply embedded in the problem solving and rational potential of the most advanced technology.

There can only be one meaningful option - that of the vocational curriculum as envisaged by Dewey, where the canons of rationality are deeply embedded in the problem solving and rational potential of the most advanced technology.

Dewey's answer to Wirth's question is therefore that technology can be used for liberal-humane aims, but that this requires a certain approach to technology and the transformation of the industrial conditions of the world of work where technology is housed so as to promote its educative potential. So the dualism is collapsed.

Globalisation

For better or worse it would seem that, according to Anthony Giddens (1999: lecture 1), "we are being propelled into a global order that no one fully understands, but which is making its effects felt upon us." If the term 'globalisation' is neither elegant nor attractive its widespread international use is some evidence for the kind of developments to which it seems to refer. Yet the term is not to be found a decade ago in Fontana Press' (1990) *The Fontana Dictionary of Modern Thought*. Nevertheless as we saw in one of the documents of *Bright Futures* - MoRST 1999) - globalisation is said to be one of the major underlying causes of the move to the knowledge society. Presumably, therefore, if it is said to be driving the knowledge society then, within a decade, we have come to know what it is. Or perhaps the term was used for its emotive and rhetorical character?

But whether we understand globalisation at all is hotly disputed between what can be called proponents - the radicals - and the protagonists - conservative sceptics. According to Giddens (1999: Lecture 1):

The radicals argue that not only is globalisation very real, but that its consequences can be felt everywhere. The global market place, they say is much more developed than even two or three decades ago, and is indifferent to national borders. Nations have lost much of the sovereignty they once had, and politicians have lost much of their capability to influence events. It isn't surprising that no one respects politicians anymore, or has much interest in what they have to say. The era of the nation state is over. Nations ... have become mere fictions.

On the other hand the sceptics, who tend to be on the political and old left and who wish nations to remain autonomous and promote the welfare state, argue that (loc.cit):

Most countries ... only gain a small amount of their income from external trade. Moreover, a great deal of economic exchange is between regions, rather than being world wide ... The notion of globalisation ... is an ideology put about by free marketeers who wish to dismantle welfare systems and cut back on state expenditures. What has happened is at most a reversion to how the world was a century ago. In the late 19th century there was already an open global economy, with a great deal of trade, including trade in currencies.

Giddens supports the radicals and goes on to argue that many see globalisation in purely economic terms. This is a mistake, he says, for it should be seen in cultural, political and technological terms as well, because instant electronic communication also shapes us and our lives in certain ways (for a discussion of how this shaping of persons might happen see Marshall, 2000). Furthermore globalisation is a complex set of processes which may be incompatible and have contradictory outcomes, and thus it doesn't simply 'denude' smaller and weaker economic states of language, culture, power and influence. Yet it may well do this with the homogenisation of computer language causing the demise of minor languages and accompanying cultures. If this is a problem for Maori and Pacific Island languages and culture it may also be a problem in Europe where, already, in response to globalisation issues there are discussions on a 'Euro' – language.

But in order to have international and wide reaching homogenising effects such as a common language and culture, there would need also to be a restructuring of the underlying infra-structures which could support such free market globalisation tendencies. Education as we have seen in *Bright Futures* is a key 'player' in the knowledge society and we should look at some of the restructuring that has occurred in education. Because not everything that has happened in the restructuring of education in New Zealand since 1988 can be covered we will look at two features only - education policy and new public management strategies as applied to education. As we have covered education policy in the Introduction we will look at that first, but briefly here (the reader should also refer to the Introduction).

Education policy and globalisation

We noted in the introduction that there has been a major international shift in how educational policy is to be conceived and articulated in policy documents. At one time education policy was domestic in that essentially it was conceived, articulated, and resided in local domains or nation states. To what extent the concerns of localised and indigenous groups were met however was another matter - the history of education for Maori is, unfortunately, a good example of that problem.

Since the 1960s and, arguably as a result of studies by comparative educators, a number of universalistic issues, dilemmas, and policies, which transcend localised nations or areas have emerged in the field of education. They appear to have the status of genuinely international issues, and have become of much concern in OECD countries as well as in developing countries. How these might have arisen is discussed above but clearly these international definitions of issues and policies have become very important especially for developing countries. To a certain extent these have become globalised as all of these matters permit of a world wide definition and a world wide treatment.

Thus with globalised definitions, problems, solutions and potential policies it would become easier for agencies such as UNESCO to prioritise between countries/areas, as all would then be on a common 'level' playing field. But just as the development of world wide definitions and purported solutions have become globalised, in their applications to developing or minor countries the education offered through the globalised policies will *itself* globalise what is on offer to the young, homogenising language and culture. And it will change the very selves of the young. As education is a key underlying element for the knowledge society these young will take further part, as they later aspire to and accept positions in the knowledge society, in homogenising education, language and culture. It is not clear that this will happen but the forces driving these issues seem difficult to oppose.

Jean-François Lyotard's (1984) notion of 'performativity', or the subsumption of education to the efficient functioning of the social system, explains in part how this is all happening but it is not clear what the alternatives are. Certainly it requires certain kinds of *governable* individuals. But the states will only survive if they not only ensure the security and economic well-being and power of

the state, but also the welfare and well-being of the population. But if nation states do not survive how is this to be assured?

New managerialism and globalisation

In the restructuring of New Zealand's education system (as in other state education systems) during the 1980s and 1990s there was a significant theoretical and practical shift from an emphasis on *administration and policy* to an emphasis on *management*. This '*new managerialism*' has drawn theoretically, on the one hand, on the model of corporate managerialism and private sector management styles and, on the other hand, on public choice theory and new institutional economics (most notably agency theory and transaction cost analysis). These theories and models have been used both as the legitimating basis and as the instrumental means for the redesigning of state educational bureaucracies, educational institutions and the public policy process.

In practice in schools we can note a decentralization of management control away from the centre to the individual institution -- often referred to as the doctrine of selfmanagement -- coupled with new accountability and funding structures. This very important shift has often been accompanied by a disaggregation of large state bureaucracies into autonomous agencies (the splitting up of the old Department of Education for example in 1988), a clarification of organizational objectives (as in school Charters say), and a separation between policy advice and policy implementation functions (the Ministry of Education advises the Minister and The Education Review Office evaluates school functioning against Charters and policy).

Under this move towards managerialism we should also note a shift from input controls to quantifiable output measures and performance targets, along with an emphasis on short term performance contracts, especially for CEOs and senior managers. In the interests of so-called productive efficiency, the provision of educational services (teacher aids, advice, etc) has been made contestable; and, in the interests of so-called allocative efficiency state education has been marketized (there are 30+ institutions offering preservice education for teachers in 2000, as opposed to 7 in 1988) and (partially) privatized (vastly increased fees, high fee paying international students, etc.).

Despite important and unaddressed questions about the value of managerialism, its legitimating rhetoric and its role in governance, it was imposed nevertheless by legislation as part of a more comprehensive package of reform. That the application of business practices to educational institutions was highly problematic, was not seriously considered in the 1980s and 1990s by successive governments.

Whilst the individual is seen as a utility maximiser (*homo-economicus*) the ways in which managerialism functions as a technology of self governance are not evident.

Whilst managerialism can be seen and understood as part of a new institutional economics, it can also be seen as a mode of governance, underpinned by problematic economic theories. As a mode of governance it will produce selves who are autonomous choosers (Marshall, 1996), rather than the autonomous individual of Enlightenment thought, committed or compelled by self interest to forms of consumerism (see neoliberalism section in Introduction) but also selves who are governable so as to act within certain norms. Managerialism should therefore be characterized as a form of governance (see Foucault [1979]). This is particularly concerning as managerialism has probably been pushed as far as anywhere else in the restructuring of government institutions including welfare, health and education. Davis (1997: 228) notes, that in New Zealand "the logic of managerialism (was pushed) further and faster than any other nation".

If globalisation is inevitable then even whilst it is concerned with more than economic factors the application of managerialism to New Zealand to all sectors of New Zealand society opens up the

possibility of rapid penetration by the sorts of world view that underlay at least the economic face of globalisation.

Conclusion

In section III I have argued that Bright Futures is not entirely new as it stands upon the shoulders of a number of changes, historical positions and arguments which I have attempted to situate historically? Certainly the knowledge economy and society are upon us but what that will bring is another matter. At least we might hope for some kind of compromise between the radical and sceptical positions outlined by Giddens above.

What we can be certain of is that the major restructuring of education that has happened in the last decade or so cannot easily be undone. True, in New Zealand, the Labour Government in 2000 has undone certain things in education in relation to bulk funding (abolished) and employment contracts, de-zoning has been strictly curtailed and moves have been made to ameliorate the hardships caused by tertiary student fees. The government has also expressed concern at the enforced competition in a tertiary sector which must have limited resources. But there is little or no sign of restoring autonomy to tertiary education. This is because the knowledge society and globalisation demands the subsumption of education in Lyotard's sense of performativity. Whether that will result in the liberated autonomous individual of traditional liberal education is another matter.

But does it need to be undone? Maybe there are good things in the knowledge society, or pressure points for resistance, or for turning exercises of power to more positive personal ends? If we conceive much of these changes as involving exercises of power then, as Foucault says, power can only be exercised over *free persons*.

Notes

1. In section I have drawn upon and used material from : (i) Marshall, James D. (1999) 'Technology in the New Zealand Curriculum', in (ed.) Thrupp, M., *A Decade of Reform in New Zealand Education: where to now?* Hamilton: University of Waikato and New Zealand Journal of Educational Studies, 34(2), 167-175; and (ii) Marshall, James D. 'Technology, Education and Indigenous Peoples: the case of Maori', *Educational Philosophy and Theory*, 32(1), 119-131. In section II I have drawn upon earlier criticisms of the curriculum framework particularly: (i) Marshall, James D. (1995), 'Skills, Information and Quality for the Autonomous Chooser' in (eds.) Olssen, M. and Matthews, K.M., *Education, Democracy and Reforms*, Auckland: NZARE Monograph, 45-60.; (ii) Marshall, James D. (1998b) 'Information on Information: recent curriculum reform', *Studies in Philosophy and Education*, 17(4), 313-321; and (iii) Marshall, James D. (1993), 'Quality Control in New Zealand Universities: accountability and autonomy' in (ed.) Chan, J.F.L., *Quality and Its Applications*, Proceedings of the First Newcastle Conference on Quality and its Applications, September 1993, Cleadon: Penshaw Press, 283-288. Section III uses ideas and reproduces material from Marshall, J.D. (2000), 'Bright Futures and the Knowledge Society', in (eds.) Marshall, J.D., Coxon, E., Jenkins, K., and Jones, A. (2000), *The Politics of Educational Policy in Aotearoa/New Zealand*, Palmerston North: Dunmore Press, 187-215. It also draws upon material noted above and other publications in the 1990s.

References

- ACCESS, 13(2), 1995. Special Edition on Constructivism.
- DAVIS, G. (1997). 'Implications, Consequences and Futures', in Davis, G., Sullivan, B. & A. Yeatman (eds.) *The New Contractualism?* Melbourne: Macmillan, pp. 224-238.
- DEWEY, John (1915) 'Education vs Trade Training: Dr. Dewey's reply', *The New Republic* 3, 15 May, p. 42.
- DEWEY, John (1916) *Democracy and Education*. New York: MacMillan.

- DEWEY, John (1935) 'The Need for Orientation' in Dewey (1958) *Philosophy of Education*. Paterson, NJ: Littlefield, Adams & Co, pp.88-92.
- DEWEY, John (1938) *Logic: the theory of inquiry*. New York: Holt, Rinehart, Winston.
- DURIE, A. (1997) 'Technology and Maori', in J. Burns (ed.) *Technology in the New Zealand Curriculum: perspectives on freedom*. Palmerston North: Dunmore Press.
- FOUCAULT, Michel (1979) 'Governmentality,' *Ideology and Consciousness*, 7, pp.5-26.
- FOUCAULT, Michel (1983) 'Afterword: The Subject and Power.' In H. Dreyfus and P. Rabinow (1983) *Michel Foucault: beyond structuralism and hermeneutics*. Chicago: Chicago University Press, pp. 208-226.
- GIDDENS, Anthony (1991) *The Reith Lectures*, London: BBC.
- HAYEK, F.C. (1978) 'Adam Smith's New Message in Today's Language' in Hayek, F.C., *New Studies in Philosophy, Politics, Economics and the Study of Ideas*. London: Routledge & Kegan Paul.
- HEIDEGGER, Martin (1977). *The Question Concerning Technology and Other Essays*, Transl. William Lovitt, New York: Harper and Row, 1977 (Original version of the essay of the name in the title was delivered in 1950).
- HIRST P.H. (1983) *Education and the Foundational Disciplines*. London: Routledge and Kegan Paul.
- INFORMATION TECHNOLOGY ADVISORY GROUP (1999) *What is the Knowledge Economy?* at <http://www.moc.govt.nz/pbt/infotech/knowledge_economy/knowledge_economy-04.html>
- LYOTARD, Jean-François ('I 984) *The Postmodern Condition: a report on knowledge* (Trans. Geoff Bennington and Brian Massumi). Mineapolis: University of Minnesota Press.
- MARSHALL, James D. (1993), 'Quality Control in New Zealand Universities: accountability and autonomy', in (ed.) CHAN, J.F.L.3, *Quality and Its Applications*, Proceedings of the First Newcastle Conference on Quality and Its Applications, September 1993, Cleadon: Penschaw Press, pp. 283-288.
- MARSHALL, James D. (1996) 'The Autonomous Chooser and 'Reforms' in Education', *Studies in Philosophy and Education*, 15(1), pp. 89-96.
- MARSHALL, James D. (1997a), 'Dewey and the "New Vocationalism"', in (ed.) Laird, S, *Philosophy of Education 1997*. Urbana, Il.: Philosophy of Education Society, pp. 163-171.
- MARSHALL, James D. (1997a) 'The New Vocationalism', in (eds.) Kay Morris Matthews and Mark Olssen, *Educational Policy in New Zealand in the 1990s: and beyond*. Palmerston North: Dunmore Press, pp. 304-326.
- MARSHALL, James D. (1997b) 'Problematising the Individual and Constituting 'the' Self'. *Educational Philosophy and Theory*, 29(1), pp.32-49.
- MARSHALL, James D. (1998a), 'Forward', *Access: critical perspectives on cultural and policy studies in education*, 17(1), iii-vi. (A special edition of *Access* on information technology).
- MARSHALL, James D. (1998b) 'Information on Information: recent curriculum reform', *Studies in Philosophy and Education*, 17 (4), pp. 313-321.
- MARSHALL, James D. (2000) 'Electronic Writing and the Wrapping of Language', *Journal of Philosophy of Education*, 34 (1), pp. 135-149.
- MARSHALL, J., PETERS, M., and SMITH, G. (1991) 'The Business Roundtable and the Privatisation of Education: individualism and the attack on Maori, in Gordon, L. and Codd, J., *Education Policy and the Changing Role of the State*. Palmerston North: Massey University, pp. 81-98.
- MINISTRY OF EDUCATION (1993) *The New Zealand Curriculum Framework*. Wellington: Learning Media.
- MINISTRY OF EDUCATION (1995) *Technology in the New Zealand Curriculum*. Wellington: Learning Media.
- MINISTRY OF EDUCATION (1997) *A Future Tertiary Education for New Zealand: Tertiary Education Review* (a Green Paper). Wellington: Ministry of Education.
- MINISTRY OF RESEARCH SCIENCE AND TECHNOLOGY (1999) *The Knowledge Society*. at <http://www.morst.govt.nz/bright/know_soc.htm>.
- PETERS, M., MARSHALL, J. & MASSEY, L. (1994) 'Recent Educational Reforms in Aotearoa' in (eds.) Coxon, E., Jenkins, K., Marshall, J.D., Massey, L., *The Politics of Learning and Teaching in Aotearoa/New Zealand*. Palmerston North: Dunmore Press, pp.251-272.
- PETERS, Michael and ROBERTS, Peter (1998) (eds.) *Virtual Technologies and Tertiary Education*. Palmerston North: Dunmore Press.
- PETERS, R.S. *Ethics and Education*. London: George Allen and Unwin.
- POSTER, Mark (1990) *The Mode of Information: poststructuralism and social context*. Cambridge: Polity Press.
- RUSSELL, Bertrand (1926) *On Education*. London: George Allen and Unwin.
- ROBERTS, R.M. and WILLS, P.R. (1998) 'Understanding Maori Epistemology: a scientific perspective', in (ed.) H. Wautischer, *Tribal Epistemologies*. Ashgate: Aldershot & Brookfield.
- SEXTON, Stuart (1991) *New Zealand School: an evaluation of recent reforms and future directions*. Wellington: Business Roundtable.
- SHIPLEY, J. (ed.) (1999) *Bright Future*, at <http://www.executive.govt.nz/brightfuture/shiple.htm>

STRIKE, K. A. (1982) *Educational Policy and the Just Society*. Urbana, Ill.: University of Illinois Press.

WIRTH, Arthur (1988) 'Issues in the Vocational-Liberal Studies Controversy (1900-1917): John Dewey vs the social efficiency philosophers,' in (ed.) David Corson, *Education for Work*. Palmerston North: Dunmore Press.